JUNE 1976
No. 6

FISHING INFORMATION

Southwest Fisheries Center-La Jolla, California

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL MARINE FISHERIES SERVICE

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
8604 LA JOLLA SHORES DRIVE - P. O. BOX 271
LA JOLLA, CALIFORNIA 92037

FISHING INFORMATION

JUNE 1976 , No. 6

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N. Abramson, Director, Tiburon Laboratory

PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department.

Submitted for publication - July 19, 1976

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ENVIRONMENTAL CHARTS ANALYZED BY:

F. Miller (Figures 8 and 9)
J. Renner (Figures 1, 2, 3, 4, 5, 6, 7, 10, 11, 12 and 15 day Supplement)

TECHNICAL EDITOR:
R. Allen
CARTOGRAPHY:
R. Allen, H. Orr

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L. Collins at Kains Island Lightstation; I.G. McNeil at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California
Fishing Vessels, *Aquarius, Captain Joe Medina, Caribe, Carol S., Carol Virginia, Concho, Conquest, Eastern Pacific, Elsinore, Jo Linda, Marco Polo, Maria Elena, Marietta, Mary Barbara, Pacific Queen, Polaris, Raefello, Santa Rosa, United States, Venturous, Voyager, Willa G.*

Expendable bathythermograph and salinity observations are made by the mates and engineers of the *Californian, Hawaiian Enterprise,* and *Hawaiian Queen* of the Matson Navigation Co. The data are processed under supervision of D.R. McLain at the NMFS Pacific Environmental Group, Monterey, using computer facilities of the Fleet Numerical Center. The project is partially supported by the National Science Foundation and the Office of Naval Research.

Sea Surface Temperature and Environmental Conditions

N. CLARK AND F. MILLER

Eastern North Pacific

Seasonal warming caused sea surface temperatures to increase over the entire eastern North Pacific during June 1976, with the area of greatest warming centered near 40°N and 155°W where temperatures increased by 6 to 8°F (3.3 to 4.4°C). This warming caused a major change in the sea surface temperature anomaly pattern of the eastern North Pacific between 30°N and 45°N and 140°W and 170°W where temperatures that were 1 to 3°F (0.6 to 1.7°C) below normal in May, increased to 1 to 3°F (0.6 to 1.7°C) above-normal values in June. This change in surface conditions was in response to decreased cloud cover (increased solar radiation) and lighter winds (decreased latent and sensible heat flow from ocean to atmosphere) over the area.

Surface temperature conditions also changed in the Gulf of Alaska region where 1 to 3°F (0.6 to 1.7°C) below-normal temperatures rose to slightly below-normal values, particularly in the western portion.

Below-normal temperature conditions persisted along the west coast of North America with 1 to 3°F (0.6 to 1.7°C) below-normal values. However, waters off Southern California and Baja California climbed to 1 to 3°F (0.6 to 1.7°C) above-normal temperatures.

Sea level pressures were up to 5 mb above normal over the entire eastern North Pacific in June, resulting in a strong anticyclone or high pressure cell centered near 35°N and 145°W. A ridge of high pressure extended northeastward from the high pressure cell over the Pacific Northwest and, together with a thermal low over inland desert and valley regions of the Southwest, caused strong north-to-northwesterly winds offshore Oregon and northern and central California.

Western North Pacific

The greatest change in the sea surface temperature anomaly pattern during June 1976 occurred between 20°N and 30°N and 160°E and 180° where temperatures that were 1 to 3°F (0.6 to 1.7°C) above normal dropped to 1 to 3°F (0.6 to 1.7°C) below-normal values due to below-normal seasonal warming of the ocean surface layer.

Below-normal temperatures persisted west of Honshu and Hokkaido although a small area of 1 to 3°F (0.6 to 1.7°C) above-normal temperatures developed off northern Honshu and south of Hokkaido.

The anomaly pattern of the central western North Pacific remained similar to those of previous months with many small regions of 1 to 2°F (0.6 to 1.1°C) above- and below-normal temperature anomalies.

Eastern Tropical Pacific

From May to June of each year sea surface temperatures (SST) normally increase in the northern hemisphere. Maximum increases of 2 to 4°F (1.1 to 2.2°C) usually occur in the "local banks" fishing grounds which extend westward from Baja California and southward to the Revillagigedo Islands. Nearly all of the cooling in the surface layers normally takes place in the southern hemisphere.

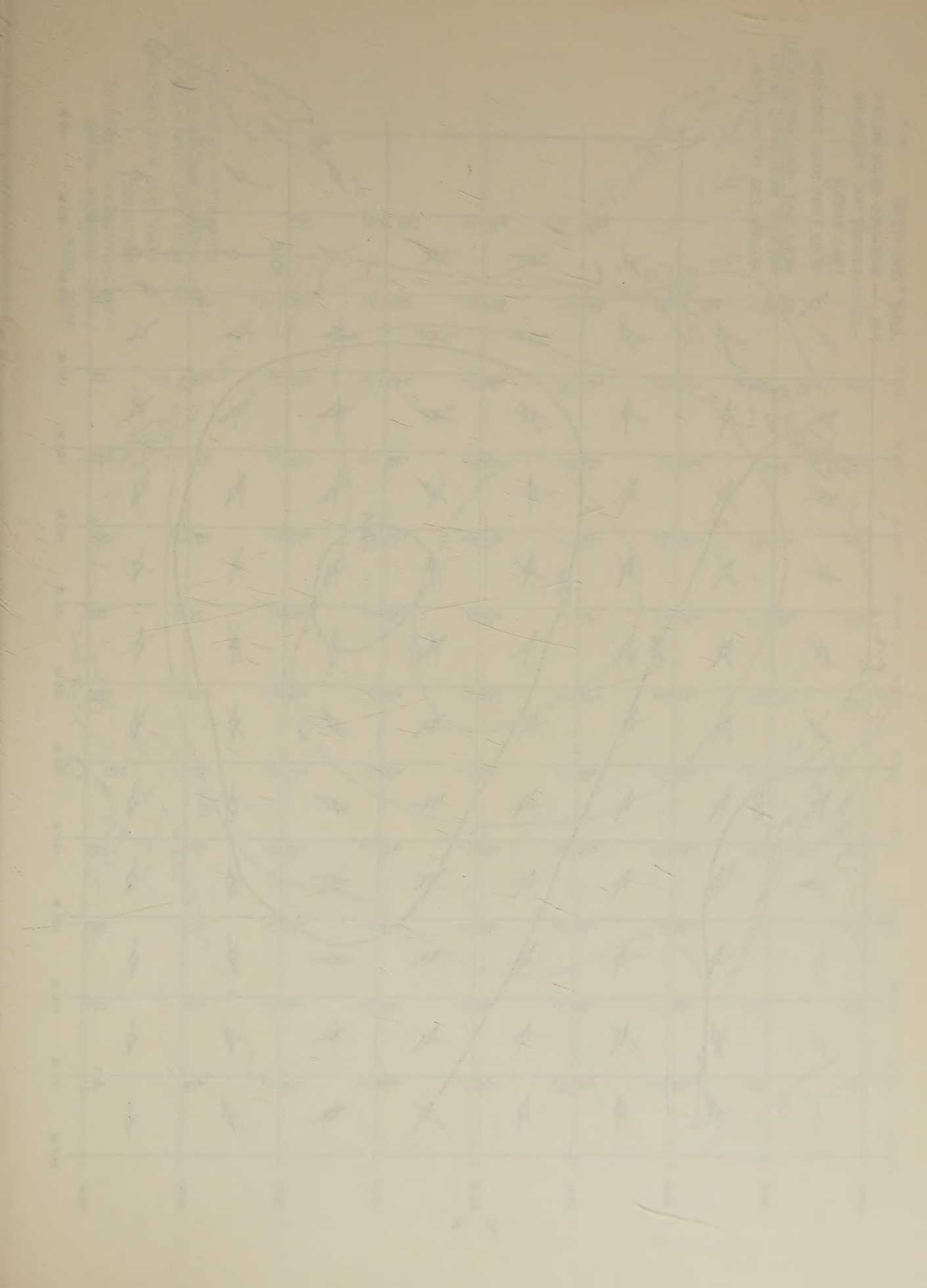
Along the equator east of 120°W and in the Peru Current west of Peru and Ecuador SST's normally decrease 2 to 4°F (1.1 to 2.2°C) during June.

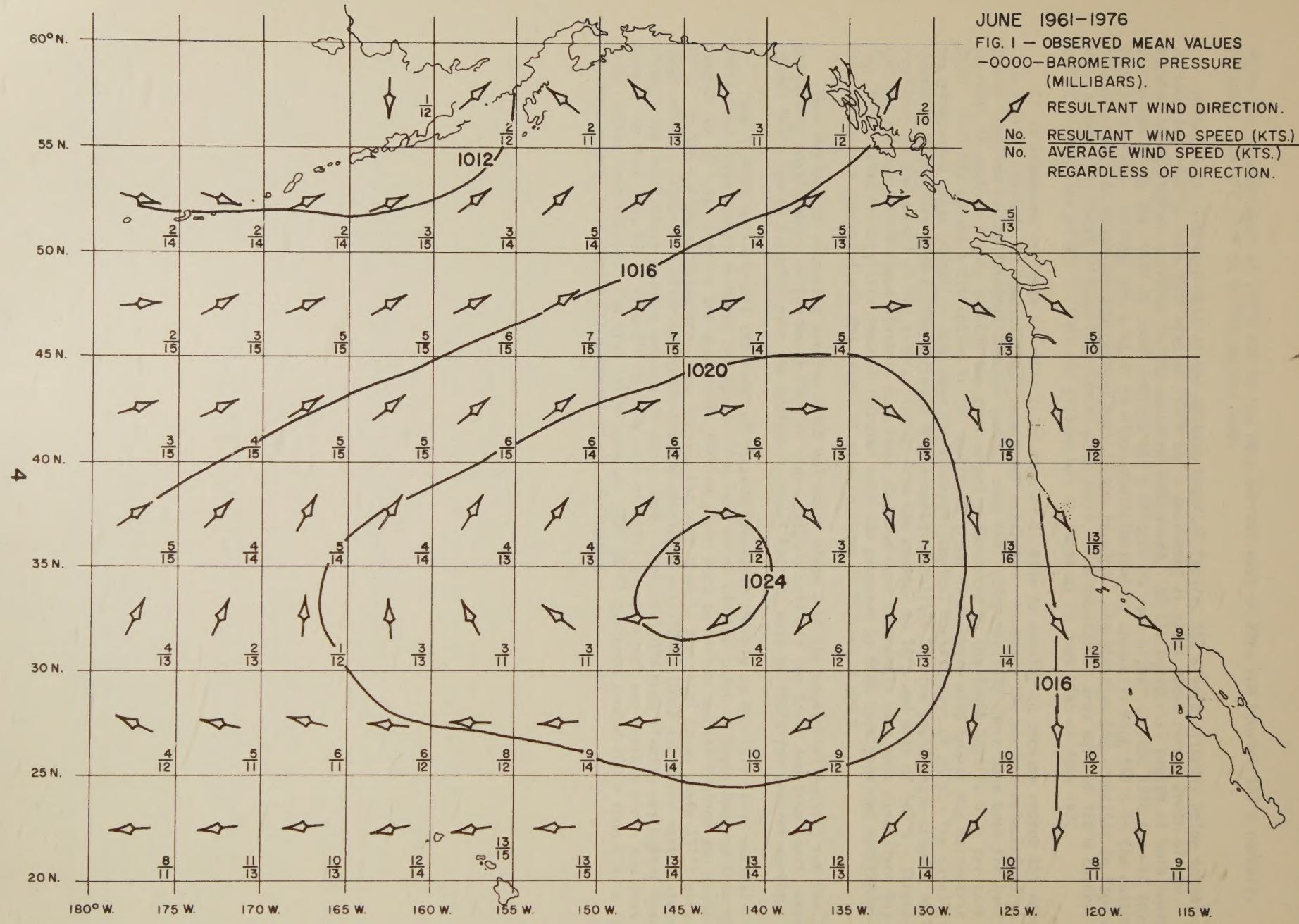
During June 1975 over most of the eastern tropical Pacific SST's were slightly below normal. In contrast, during June 1976 east of 120°W SST's increased at rates above normal north of the equator and increased markedly in the southern hemisphere. In the equatorial region of both hemispheres and along the coast of South America SST's (Figure 8) were higher in June 1976 than in any June since 1972. During 1972 a major El Niño (characterized by unusually high SST's in the eastern tropical Pacific) developed and covered most of the tropics. The positive SST anomalies in Figure 9 were larger than those in June 1965 (an El Niño year). The equatorial area east of 120°W covered by positive anomalies of 2°F (1.1°C) and greater was as large as in June 1965 or June 1972.

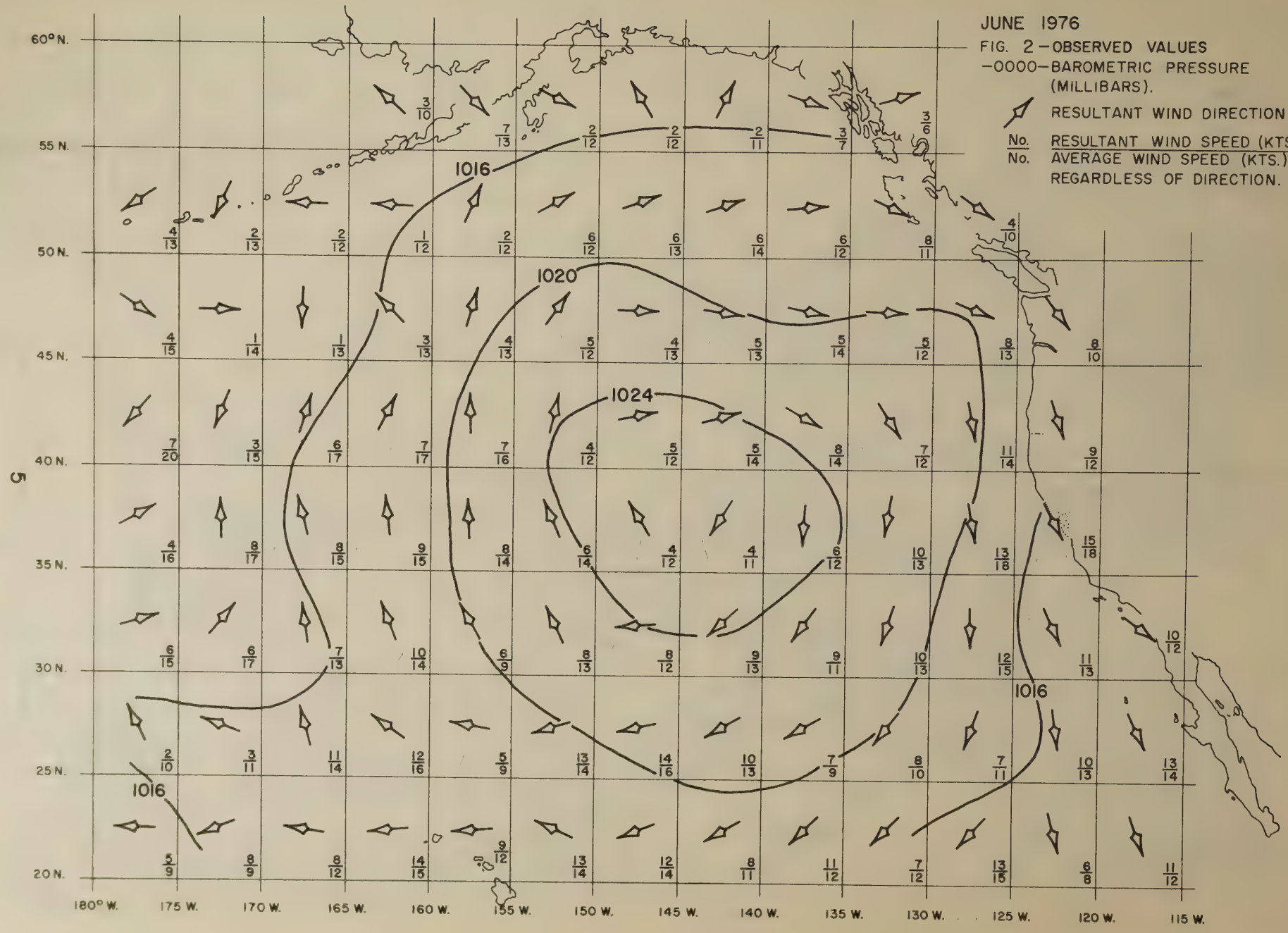
It is premature to state (at this time) that an El Niño is developing because recent SST data from coastal stations in Ecuador and Peru are not available. However, the surface meteorological charts supplied by the National Weather Service show that since May 1975 there have been frequent passages of weather fronts through the area normally dominated by the South Pacific high pressure cell. This has caused a disruption in the southeast trade winds where wind speeds and barometric pressures were below normal in June over the southern tropical Pacific east of 95°W. The satellite composite photos provided by the National Environmental Satellite Service (NESS) have shown a marked reduction in the amount of low stratus clouds from the equator to 10°S and east of 100°W. Stratocumulus and cumuliform cloud clusters have been observed more frequently over this area since May. The SST's, based on satellite thermal infrared data and prepared by NESS have provided additional data to confirm the magnitude and extent of warming shown in Figures 8 and 9.

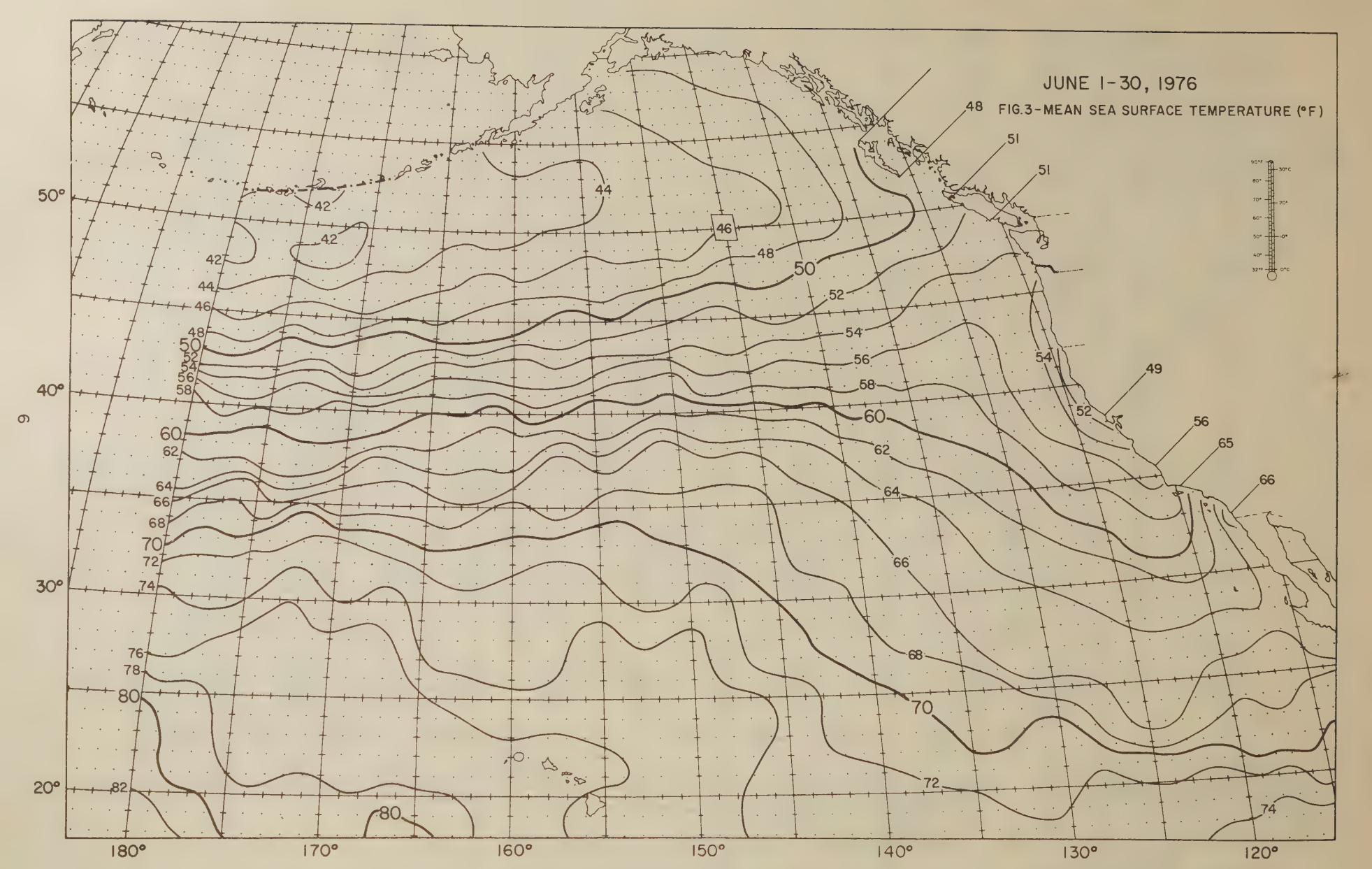
Considering the extensive warming which has taken place over the equatorial Pacific and the continuing displacement of the South Pacific high pressure cell off the South American coast, above-normal SST's can be expected over the eastern tropical Pacific east of 150°W for several months.

Tuna fishing activity off the coast of Ecuador decreased sharply by May 1976 after coastal SST's rose above normal in March and April. The warm water off the coast of South America from the equator to 15°S may confine the anchovetta fishing along Peru to narrow coastal regions and south of 15°S. In the northern hemisphere, tuna fishing was very good in the local banks where SST's were above normal, especially after hurricane Annette developed near 12°N, 100°W and moved northwestward through the local banks fishing grounds in early June. West of 120°W tuna fishing was better than usual. In that area SST's from 5°N to 10°N were slightly above normal and surface winds and seas were lighter than normal. The high SST's (greater than 85°F) centered around 100°W from 5°N to 15°N provided a large heat source for tropical storm development.




JUNE 1961–1976
FIG. 1 — OBSERVED MEAN VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. / No. RESULTANT WIND SPEED (KTS.) / AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1012
1016
1020
1024
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


JUNE 1976
FIG. 2 – OBSERVED VALUES
–0000– BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1016
1020
1024
1016
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


JUNE 1-30, 1976
FIG.3-MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
48
51
51
49
54
52
56
65
66
44
42
42
42
46
48
50
52
54
56
58
60
62
64
66
68
70
72
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50
48
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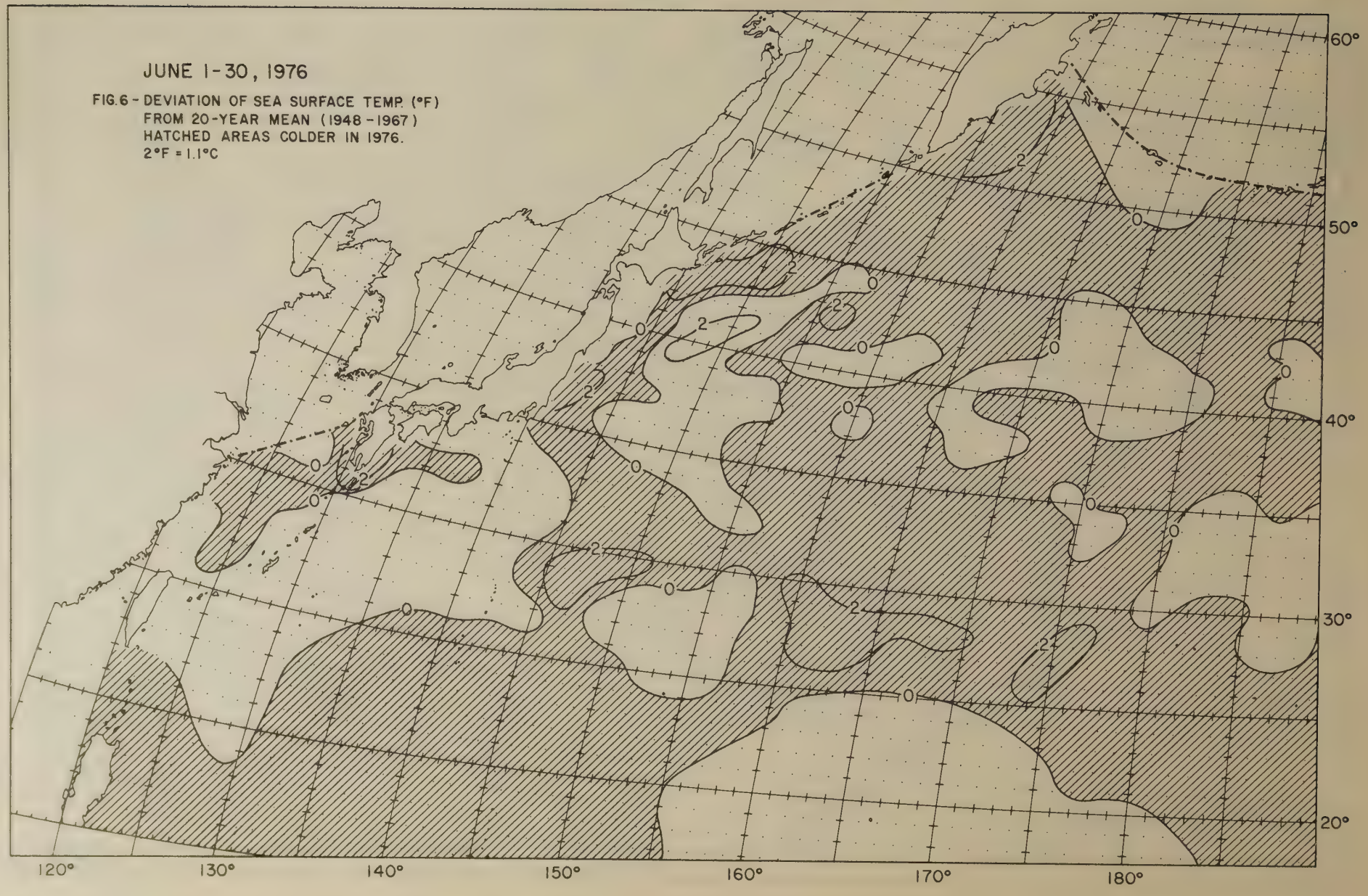
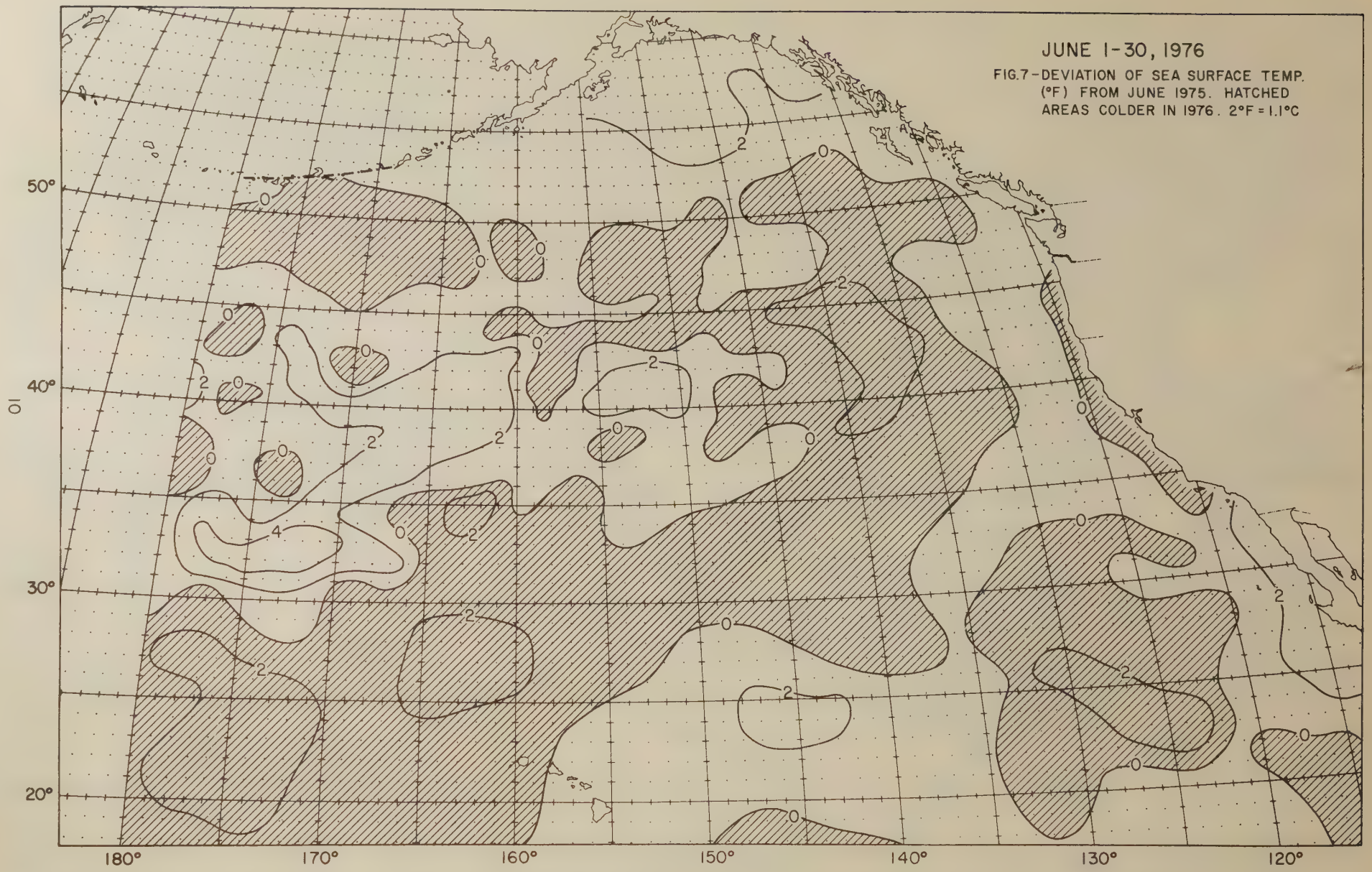
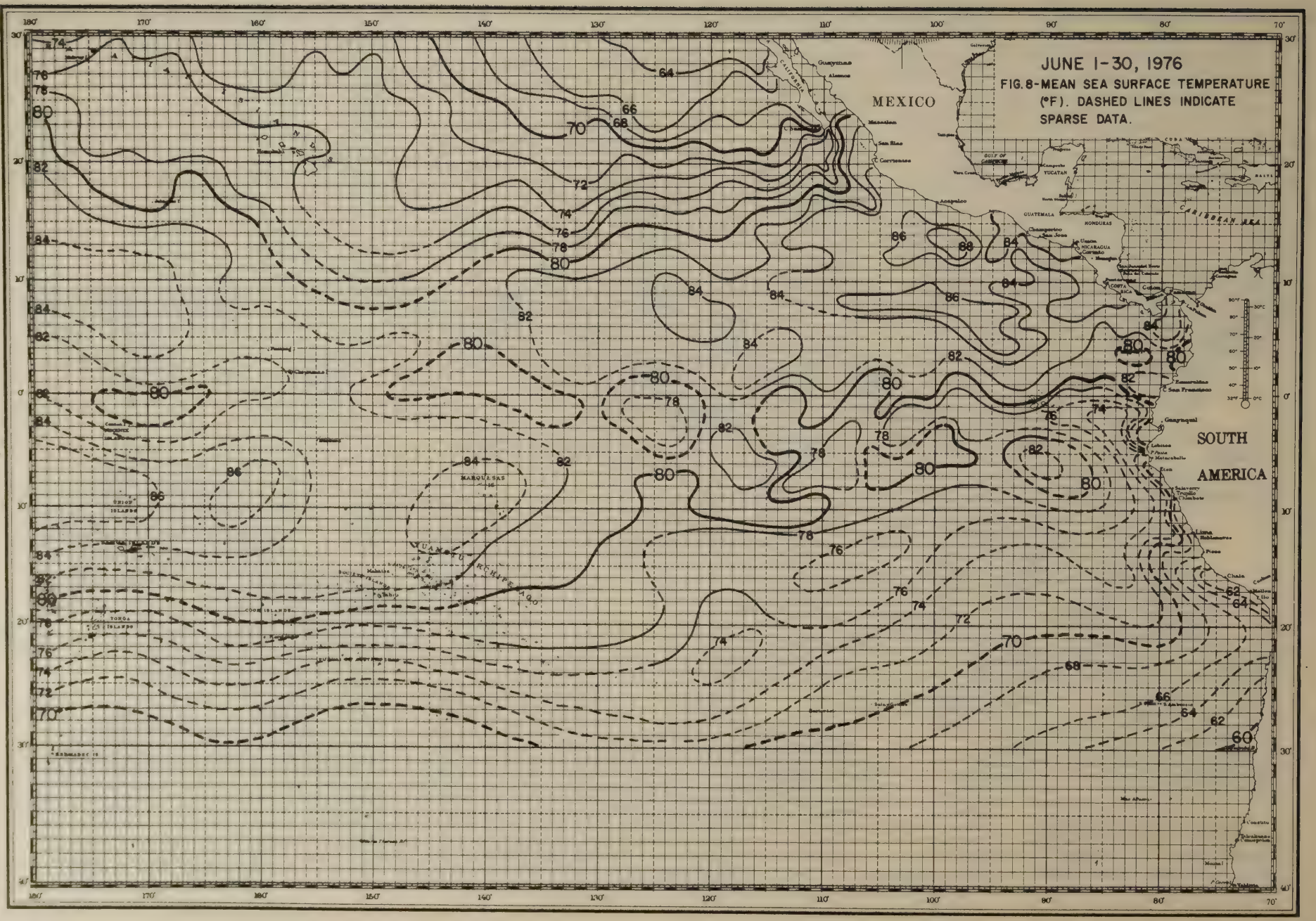

JUNE 1-30, 1976
FIG.6 - DEVIATION OF SEA SURFACE TEMP. (°F)
FROM 20-YEAR MEAN (1948 - 1967)
HATCHED AREAS COLDER IN 1976.
2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


JUNE 1-30, 1976
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°F) FROM JUNE 1975. HATCHED AREAS COLDER IN 1976. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


JUNE 1-30, 1976
FIG. 8-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
MARQUESAS
UNION ISLANDS
TOKOA ISLANDS
COOK ISLANDS
EASTER ISLAND
GUAYAQUIL
LIMA
CHILE

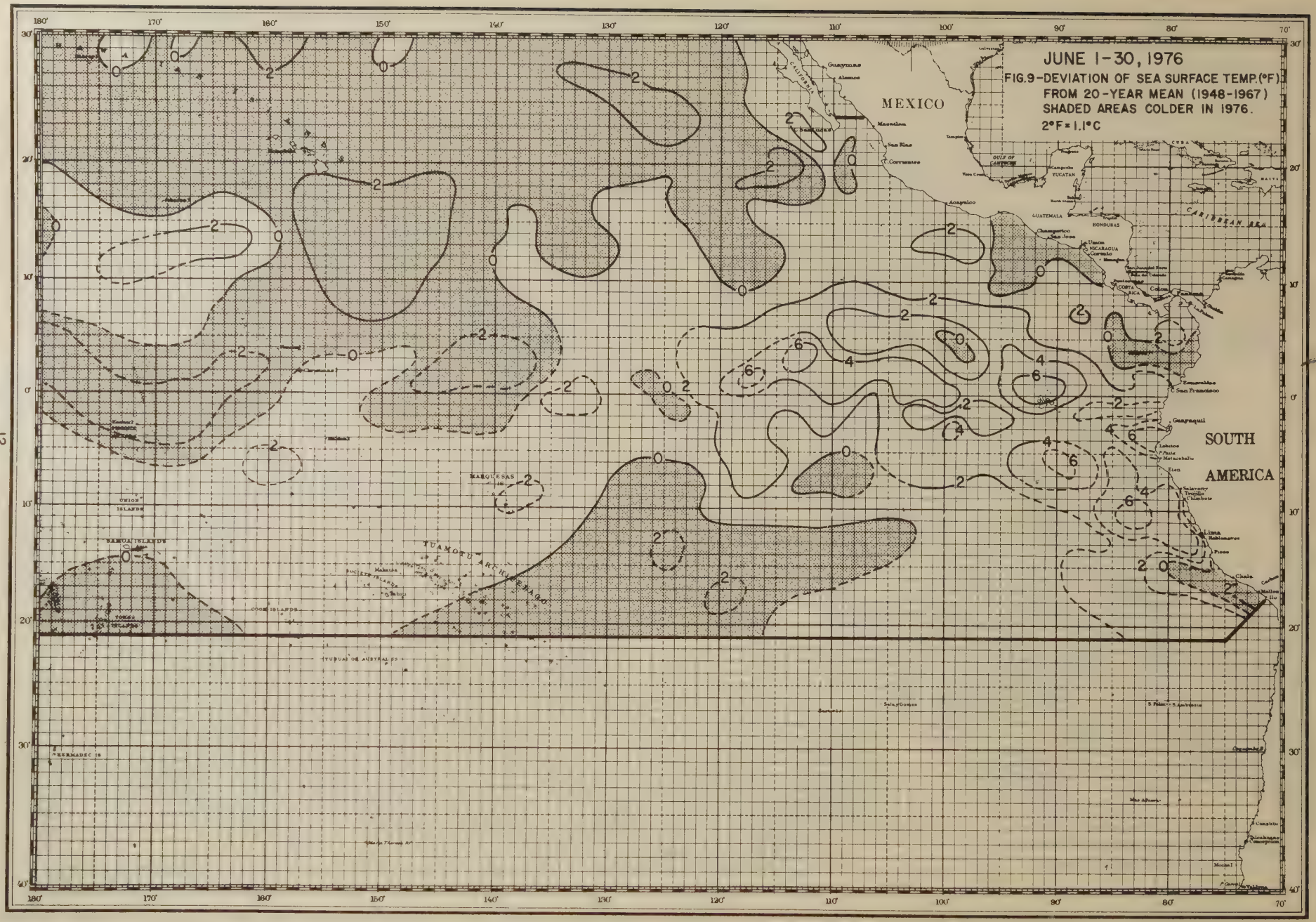
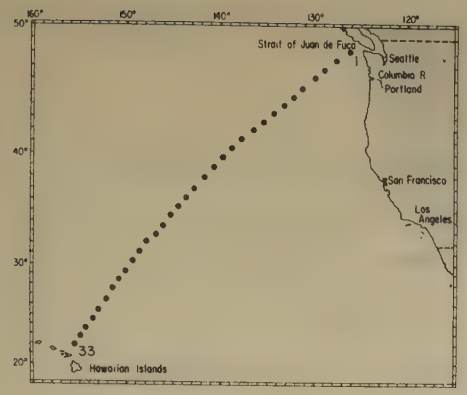
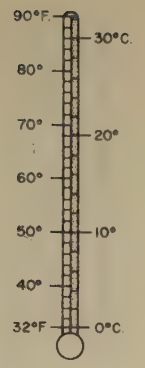

JUNE 1-30, 1976
FIG.9-DEVIATION OF SEA SURFACE TEMP.(°F)
FROM 20-YEAR MEAN (1948-1967)
SHADED AREAS COLDER IN 1976.
2°F = 1.1°C
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
YUCATAN
CUBA
HAITI
MARQUESAS
TUAMOTU ARCHIPELAGO
SAMOA ISLANDS
UNION ISLANDS
COOK ISLANDS
TUBUAI OR AUSTRAL IS
HERMADEC IS
Acapulco
Guaymas
Mazatlan
San Blas
Corrientes
Manzanillo
Puerto Cortes
Colon
Buenaventura
Esmeraldas
San Francisco
Guayaquil
Salaverry
Trujillo
Chimbote
Lima
Pisco
Chala
Mollendo
Arica
Iquique
Antofagasta
Coquimbo
Valparaiso
Talcahuano
Concepcion
Mocha I
Juan Fernandez Arch
Sala y Gomez
Easter I
Mas Afuera
Mas a Tierra
Galapagos Is
Cocos I
Malpelo I
Gorgona I
Gallo I
Tobago I
Malden I
Penrhyn I
Manihiki
Rakahanga
Suwarrow I
Nassau I
Palmerston I
Niue I
Tongatabu
Fiji Is
Rotuma I
Wallis Is
Futuna I
Rose I
Swains I
Jarvis I
Howland I
Baker I
Phoenix Is
Canton I
Enderbury I
Hull I
Sydney I
Malden I
Starbuck I
Flint I
Vostok I
Caroline I
Ocean I
Fanning I
Christmas I
Palmyra I
Johnston I
Sand I
Kingman Reef
Line Is
Tahiti
Moorea I
Raiatea
Tahaa
Bora Bora
Maupiti
Mopelia
Scilly I
Bellingshausen I
Manuae
Hervey Is
Rarotonga
Aitutaki
Manuae
Mitiaro
Atiu
Mauke
Takutea
Penrhyn
Pukapuka
Nassau I
Suwarrow I
Rakahanga
Manihiki
Tongareva
Palmerston I
Niue I
Tongatabu
Fiji Is
Rotuma I
Wallis Is
Futuna I
Rose I
Swains I
Jarvis I
Howland I
Baker I
Phoenix Is
Canton I
Enderbury I
Hull I
Sydney I
Malden I
Starbuck I
Flint I
Vostok I
Caroline I
Ocean I
Fanning I
Christmas I
Palmyra I
Johnston I
Sand I
Kingman Reef
Line Is
Tahiti
Moorea I
Raiatea
Tahaa
Bora Bora
Maupiti
Mopelia
Scilly I
Bellingshausen I
Manuae
Hervey Is
Rarotonga
Aitutaki
Manuae
Mitiaro
Atiu
Mauke
Takutea
Penrhyn
Pukapuka

FIGURE 10





HONOLULU — SEATTLE
(Makapuu Pt. — St. of Juan de Fuca)

MAY 28 — JUNE 3, 1976

CALIFORNIAN

VOYAGE 271

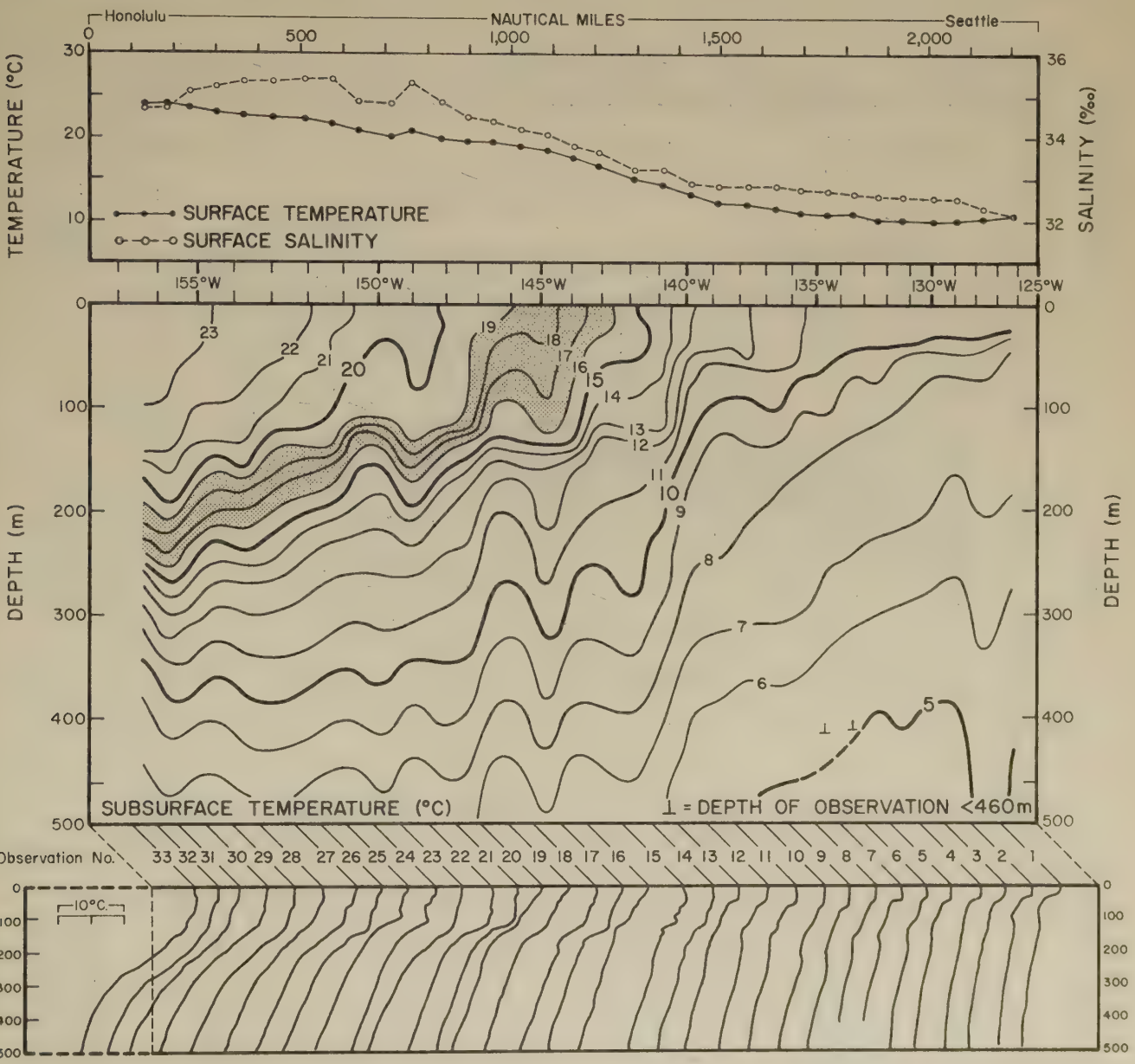
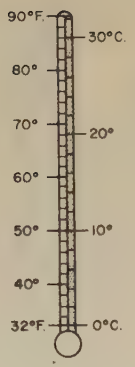


FIGURE 11



HONOLULU – SAN FRANCISCO

MAY 27 – JUNE 1, 1976

HAWAIIAN QUEEN

VOYAGE 158

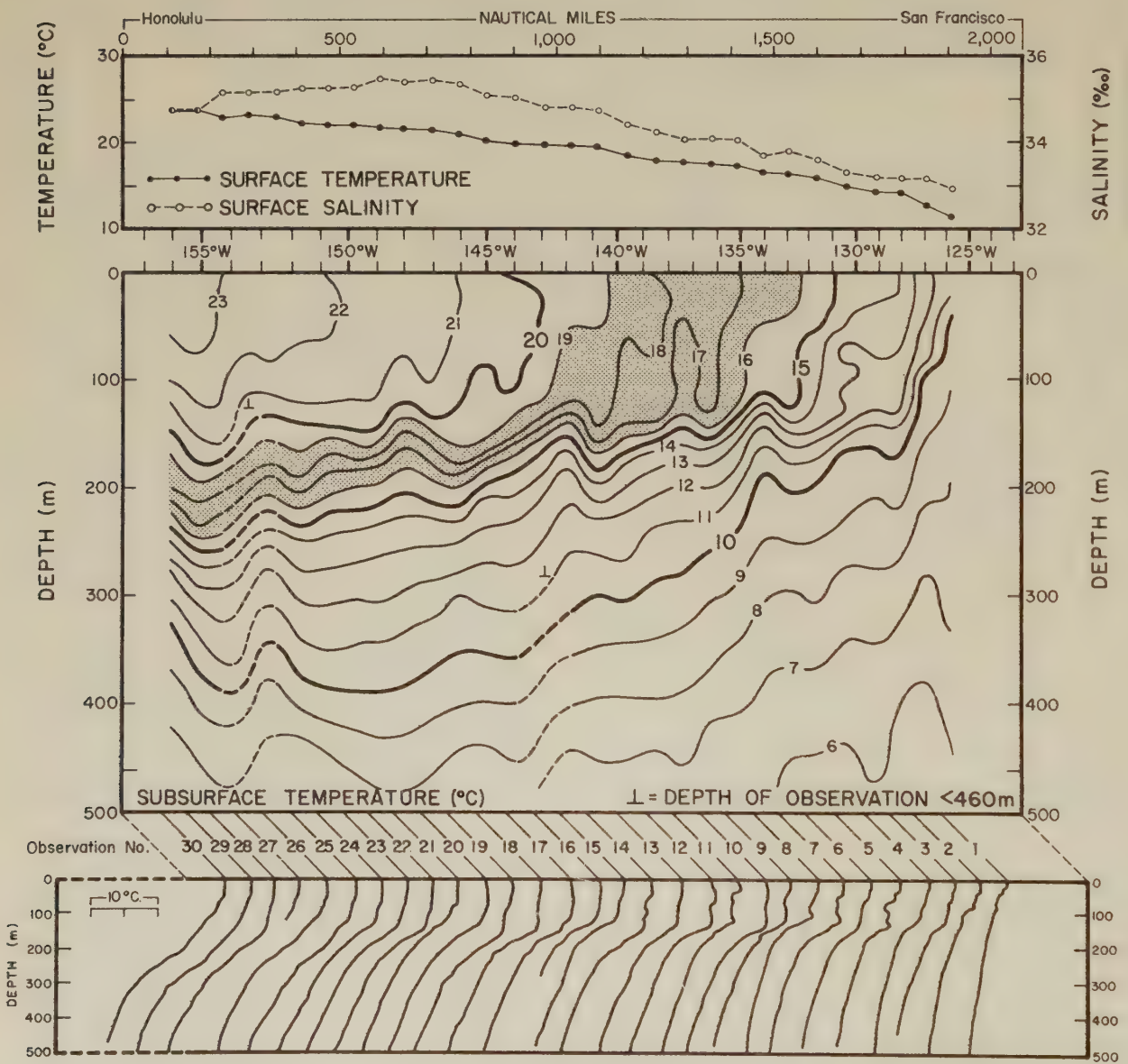
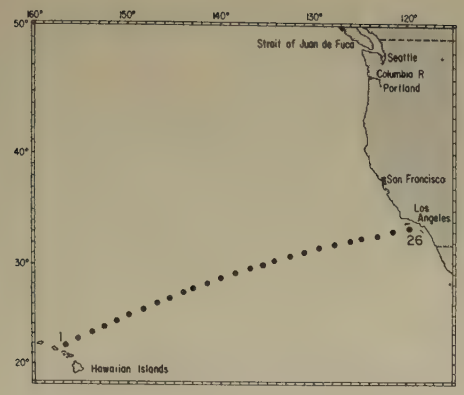
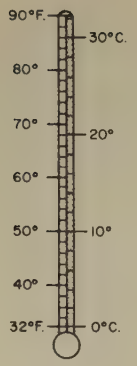


FIGURE 12



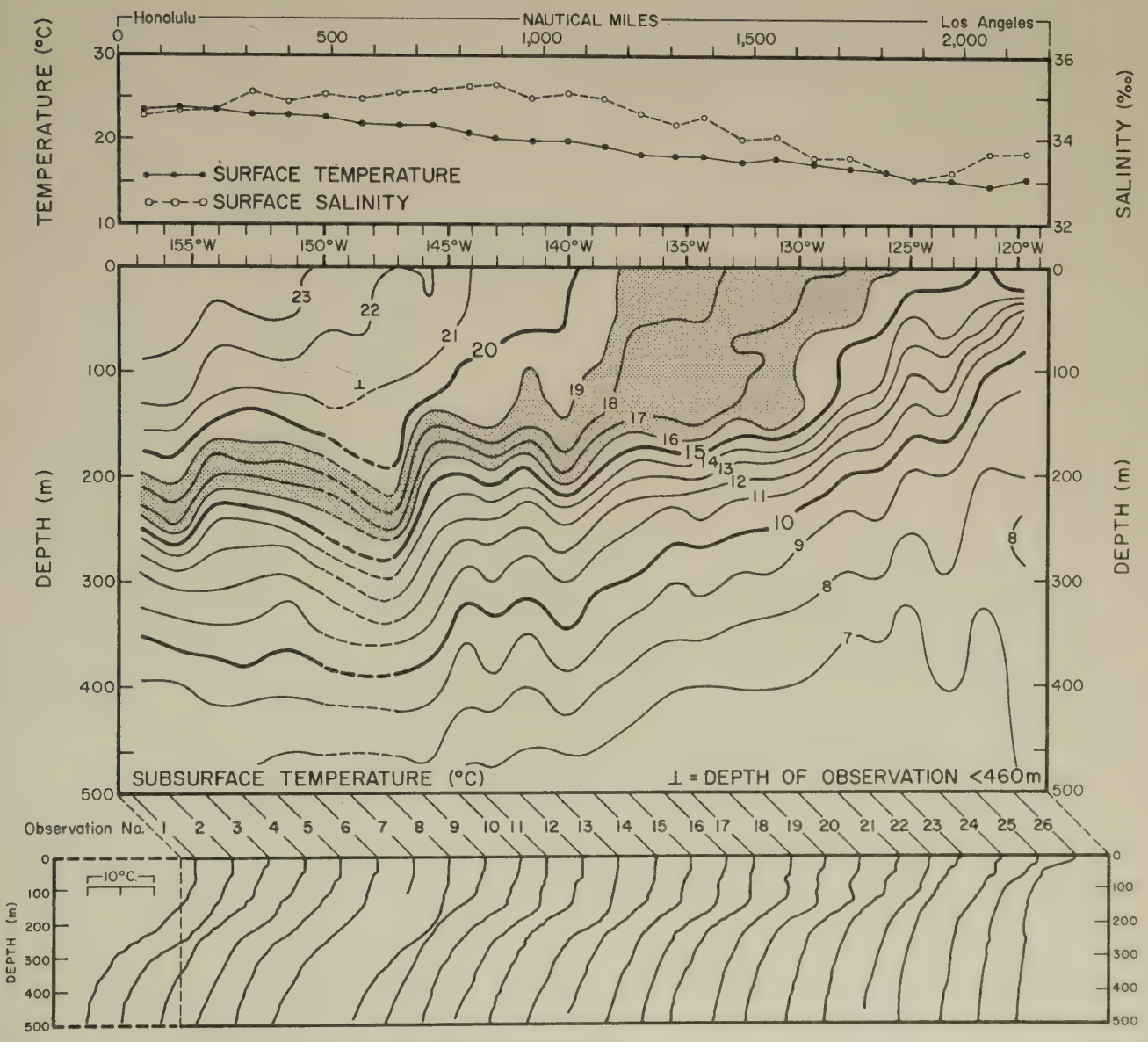


HONOLULU — LOS ANGELES

JUNE 16-20, 1976

HAWAIIAN ENTERPRISE

VOYAGE 143



UNITED STATES
DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
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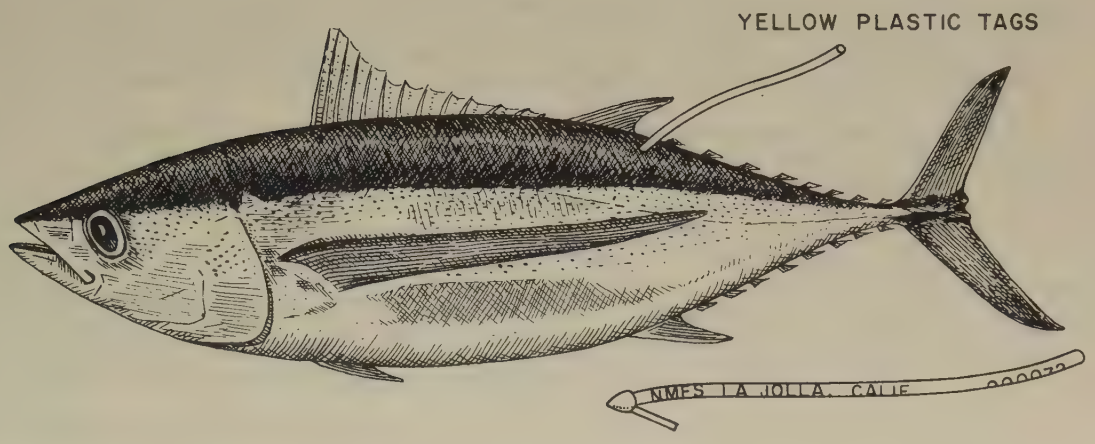
FOR ALBACORE TUNA TAGS



THE
NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 2.00 FOR EACH TAG RETURNED (SOME FISH HAVE MORE THAN ONE TAG).

THE
AMERICAN FISHERMEN'S RESEARCH FOUNDATION WILL AWARD CASH PRIZES FOR THE NUMBERS DRAWN IN AN ANNUAL LOTTERY.

WRITE:

- WHERE
- WHEN
- HOW

} *FISH WAS CAUGHT*

- LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

FORWARD TO NMFS ADDRESS ON TAG OR TO AFRF
5055 N. HARBOR DRIVE, SAN DIEGO, CALIFORNIA

Daily broadcasts of albacore fishing information prepared by NOAA's National Marine Fisheries Service will be transmitted over marine radiobands starting July 12 and extending to October 31 or until the season ends. The broadcasts will be made on weekdays and Saturday mornings by the following radio stations:

WWD (La Jolla, California) on SSB carrier frequencies 4409.4, 8789.6, and 12424.5 kHz at 0615 and 1745 PDT on weekdays and 0815 on Saturdays.

KFX (Astoria Marine Operator) on 2598 kHz at 0630 and 1945 PDT.

KNPT (Newport, Oregon) on commercial AM 1310 kHz at 0615 and 1830 PDT.

NMC (Point Reyes Coast Guard) on AM compatible frequency 2670 and on SSB carrier frequency 8760.8 at 0645 and 1945 PDT.

KRED (Eureka, California) on commercial AM 1480 kHz 0600 and 2000 PDT.

(to determine the upper sideband assigned frequencies for tunable receivers add 1.4 kHz to WWD and NMC carrier frequencies)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92038

BULLETIN No. 76-1

ALBACORE FORECAST AND COOPERATIVE RESEARCH ACTIVITIES FOR THE 1976 SEASON

It appears that catches of albacore off central and southern California should improve this season over what y have been for the past several years. It is estimated that approximately 50% of the total catch will be en in waters south of San Francisco and 50% in waters to the north. During the 1975 albacore season, about 70% the catch was made from waters off the Pacific northwest and 30% from waters south of San Francisco.

The results of 1) preseason scouting, and 2) the apparent long-lasting and more westerly position than usual this time of year of the Japanese live-bait fishery in the western Pacific indicate that at least a portion of migration of albacore to the North American west coast will be late in arriving this season. This may be the especially for fish entering waters off the Pacific northwest. Good early-season fishing is expected, however, southern California southward to about Guadalupe Island. The appearance of concentrations of fish off northern fornia, Oregon, and Washington is not expected until after mid-July to early August. Overall, it is expected fishing will be good off central California, but that availability of fish there may also be somewhat later usual. Fishing in the offshore waters between 135° to 145° W is expected to be fairly good about mid-June th of approximately 35° N and somewhat later north of 35° N. Because of weak oceanic frontal conditions, fish move through the offshore waters south of 35° N rather quickly and fishing may be somewhat scattered. North of N the frontal conditions appear to be stronger and fish may be more concentrated.

The outlook for sportfishing off southern California is good with an expected early start.

The NMFS and the American Fishermen Research Foundation (AFRF) are continuing this season to conduct coopera- e albacore research studies. The purposes of the cooperative studies scheduled to be conducted during 1976 are further investigate the shoreward migration of albacore tuna into the North American west coast fishery and the sociated marine environmental factors that could influence the migration, and to study the distribution and ilability of albacore in offshore and nearshore regions. These studies are designed to improve our knowledge the factors affecting the onset and subsequent development of the fishery, and to examine the possibilities for shermen to extend the fishery farther offshore and to start the fishery earlier than usual.

Operations are being conducted by seven commercial fishing vessels on charter to AFRF and by the NMFS research ssel David Starr Jordan, and will include fishery-oceanography, tagging, and fish scouting. Four jigboats on arter to AFRF are working in offshore waters during early season, and three jigboats will operate on charter ring the fishing season to evaluate the availability of fish in areas other than where the main portions of the eet are operating and conduct tagging operations.

The first pair of chartered boats (Sunrise and Lusty) departed San Diego on May 22 and headed in a west-south- sterly direction to cover the area outside of Guadalupe Island. These boats recorded their first albacore catch six fish on May 24 about 330 miles west-southwest of San Diego, but continued to work westward and on June 14 re between 31°30'-32° N and 139-139°30' W. Catches have been made almost daily on mostly 4-16 pound albacore ce May 24 while fishing in 59-67° F (15-19.4° C) sea surface temperature waters. Fishing has been slow, but d catches of 120-170 fish were reported on June 10 and 11 between 31°30'-32° N and 139-140° W in 66-69° F 3.9-19.4° C) sea surface temperature waters.

The second pair of chartered boats (Vivian M and Sea Finn) left San Diego on June 3 and headed in a more sou- rly direction than the previous two chartered boats. Their first albacore catch was made on June 4 about 0-180 miles south-southwest and south of San Diego. Since that date, these boats have had 0-48 fish days while rking south to San Benitos Island and north to San Juan Seamount before heading offshore. On June 14, these ts were approximately 650-680 miles west-southwest of San Diego. Most of the fish caught by the two boats have n 7-24 pounds and the best catches and fish signs observed were between Cape Colnett and San Martin Island.

The R/V David Starr Jordan began its cruise on June 2 and headed westward to 32° N, 137° W. On June 7, the rdan started oceanographic work in detail in cooperation with the two chartered jigboats in the vicinity. The rdan also trolled for albacore on June 8-13 between 32-34° N and 137-139°15' W but caught only a few fish.

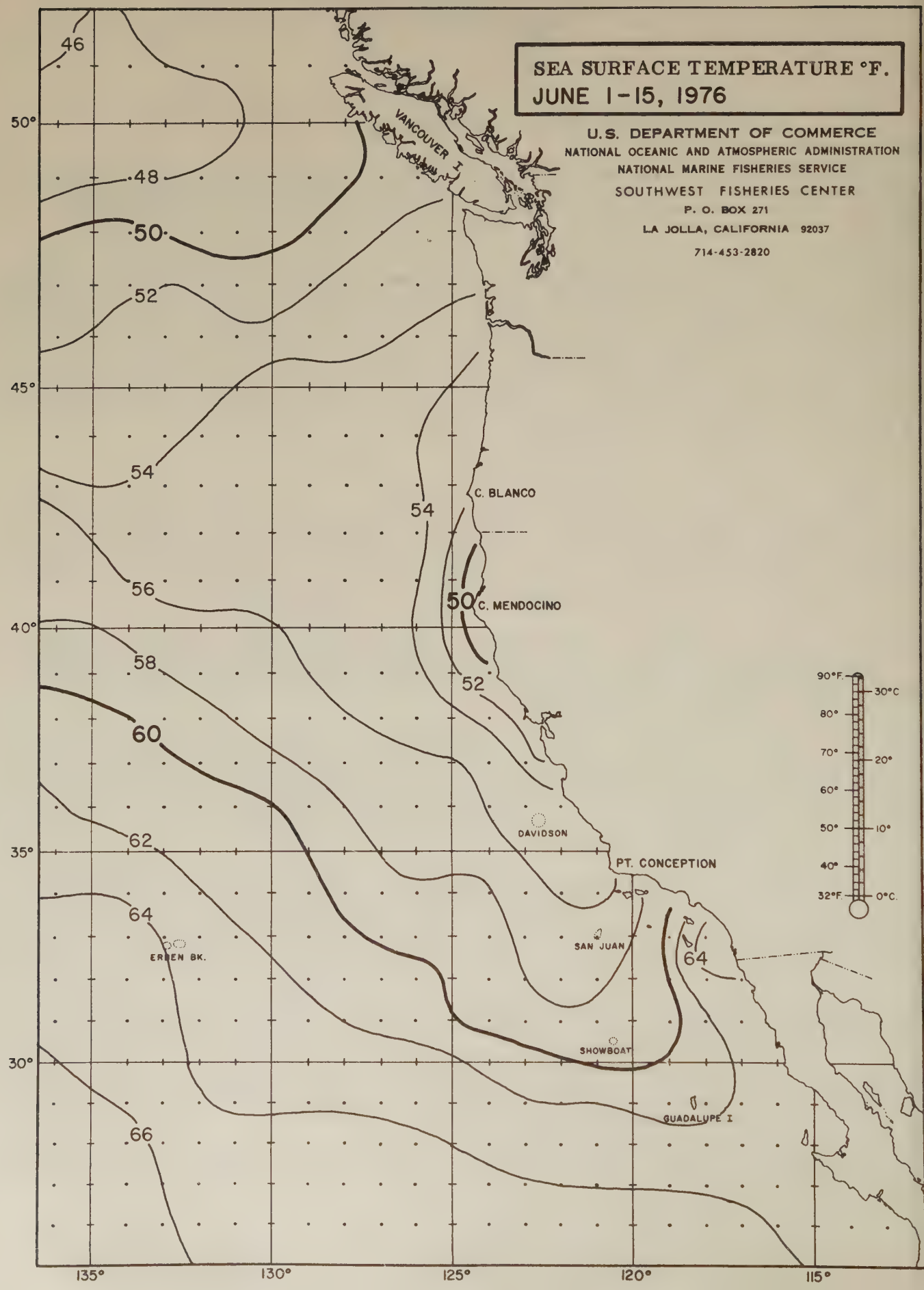
Small catches on 7-16 pound albacore were reported between San Diego and San Benitos Island by a commercial t during the last week of May. Other non-chartered commercial jigboats and sportboats also began to fish ween Cape Colnett and Guadalupe Island with some success in early June. Commercial catches by a few non-char- ed jigboats in the offshore areas have generally been poor.

A price settlement of albacore landed on the U.S. west coast was reached on June 3. This price is $910 per delivered to the canneries.

e 14, 1976

Staff, Albacore Fisheries Program
R. Michael Laurs, Leader

FISHING INFORMATION – supplement



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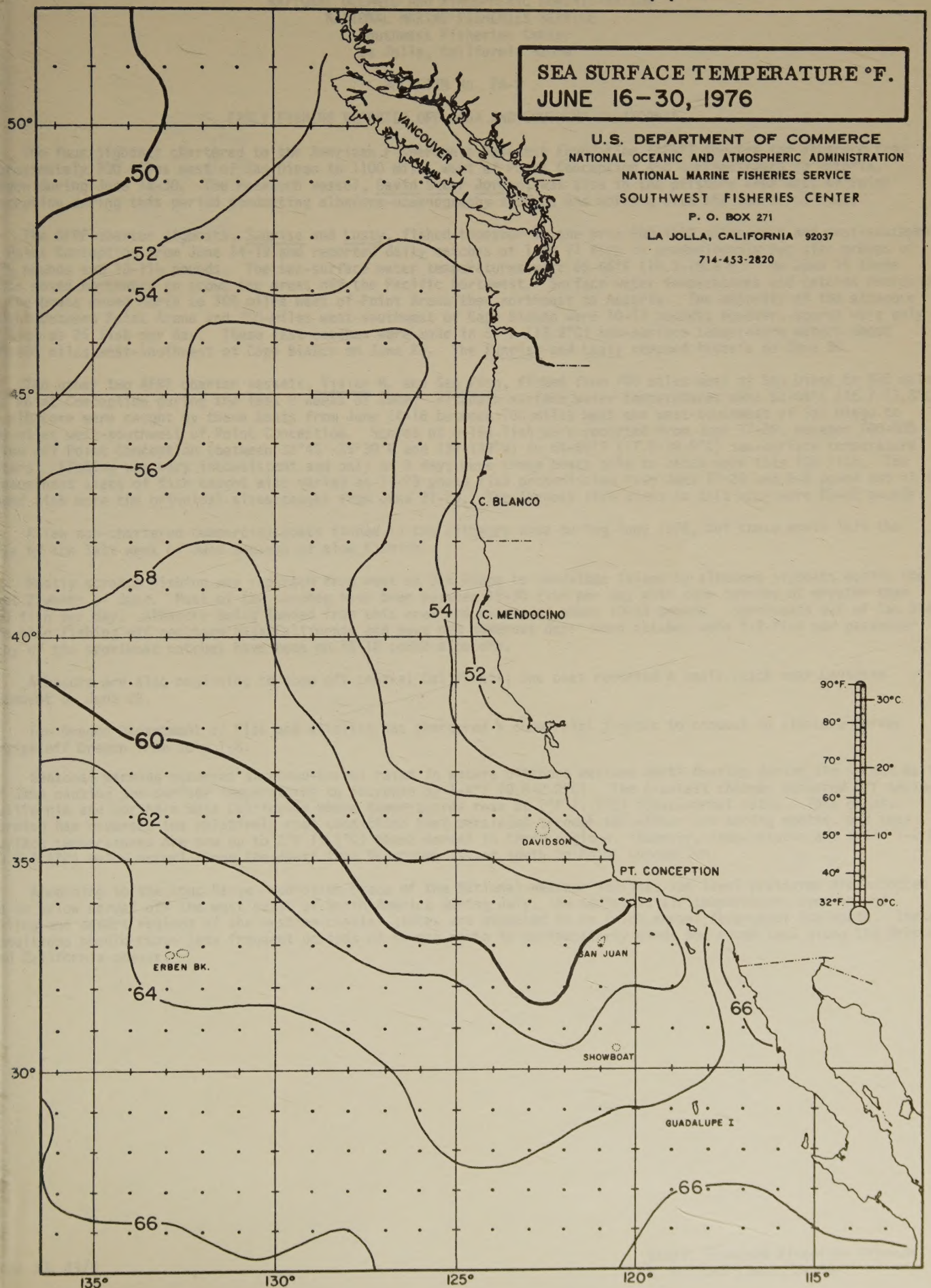

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
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BULLETIN No. 76-2

EARLY FISHING REPORTED OFF BAJA AND SOUTHERN CALIFORNIA

The four jigboats chartered to the American Fishermen's Research Foundation (AFRF) scouted for albacore from proximately 700 miles west of San Diego to 1100 miles west of Point Conception and northeastward to Astoria, egon during June 14-30. The research vessel, David Starr Jordan, was also in the offshore area west of Point nception during this period conducting albacore-oceanography studies and working with the chartered boats.

The AFRF charter jigboats, Sunrise and Lusty, fished together in the area 900-1100 miles west and west-southwest Point Conception from June 14-19 and reported daily catches of 1 to 77 fish in predominantly two size groups of 7½ pounds and 10-11½ pounds. The sea-surface water temperatures were 65-66°F (18.3-18.9°C). On June 19 these ats moved northward to scout the areas off the Pacific Northwest. Surface water temperatures and catches decreased the boats moved north to 700 miles west of Point Arena then northeast to Astoria. The majority of the albacore ught between Point Arena and 300-miles west-southwest of Cape Blanco were 10-13 pounds; however, scores were only high as 25 fish per day. These last catches were made in 57°F (13.9°C) sea-surface temperature waters about 0-300 miles west-southwest of Cape Blanco on June 25. The Sunrise and Lusty reached Astoria on June 30.

The other two AFRF charter vessels, Vivian M. and Sea Finn, fished from 700 miles west of San Diego to 900 miles f Point Conception during the last 2 weeks of June. Although surface water temperatures were 62-64°F (16.7-17.8°C), albacore were caught by these boats from June 14-16 between 700 miles west and west-southwest of San Diego to 0 miles west-southwest of Point Conception. Scores of 0-184 fish were reported from June 17-29, between 700-900 les off Point Conception (between 32°45'-35°30'N and 137-139°W) in 64-66°F (17.8-18.9°C) sea-surface temperature ters. Fishing was very inconsistent and only on 3 days were these boats able to catch more than 100 fish. The edominant sizes of fish caught also varied as 11-13 pound fish predominated from June 17-20 and 5-8 pound and 11-12 und fish were the principal sizes caught from June 21-29. The largest fish sizes in this area were 20-22 pounds.

A few non-chartered commercial boats fished in the offshore area during June 1976, but these boats left the ea by the last week of June because of slow fishing.

Mostly scratch fishing was reported from west of San Diego to Guadalupe Island by albacore jigboats during the st 2 weeks of June. Most of the catches have been between 15-30 fish per day with some catches of greater than 0 fish per day. Albacore being landed from this area are averaging about 10-13 pounds. Sportboats out of San Diego e also fishing off northern Baja California and have had numerous days when catches were 1-3 fish per passenger. ny of the sportboat catches have been on 16-18 pound albacore.

Albacore are also beginning to show off central California; one boat reported a small catch near Davidson eamount on June 29.

The Oregon Department of Fish and Wildlife has chartered a commercial jigboat to conduct an albacore survey uise off Oregon from July 1-8.

Seasonal warming occurred at above-normal rates in waters offshore western North America during the second half f June causing sea-surface temperatures to increase by 1-4°F (0.6-2.2°C). The greatest changes occurred off southern alifornia and northern Baja California where temperatures rose at 2°F (1.1°C) above-normal rates. This excess arming has reversed the relatively cool conditions that persisted through the winter and spring months, and sea- urface temperatures are now up to 2°F (1.1°C) above normal in these regions. However, temperatures are still 1-2°F 0.6-1.1°C) below normal along the coast from Vancouver Island south to Point Conception.

According to the Long Range Prediction Group of the National Weather Service, sea level pressures are expected o be below normal off the west coast of North America during July. In addition, air temperatures over inland alley and desert regions of the western coastal states are expected to be below normal throughout the month. These onditions should cause less frequent periods of strong north to northwesterly winds and rough seas along the Oregon nd California coasts.

ne 30, 1976

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